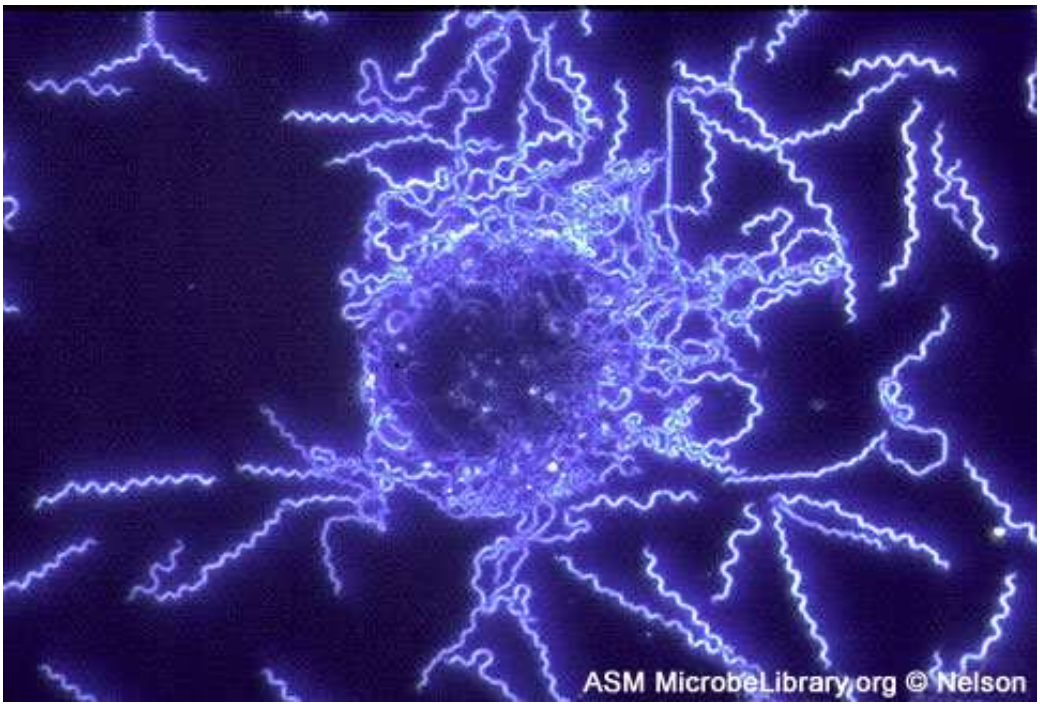
NATIONAL LYME BORRELIOSIS TESTING LABORATORY

USER MANUAL



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1.0 Introduction

The National Lyme borreliosis testing laboratory provides a specialist diagnostic service for Scottish Health Boards and other users by request. The laboratory is located within the Microbiology Department, Raigmore Hospital, Inverness. The department is accredited by Clinical Pathology Accreditation (UK) Ltd.

Lyme borreliosis (formerly Lyme disease) is caused by the spirochaete *Borrelia burgdorferi* and is endemic in Scotland.

2.0 Contact details and key personnel

2.1 Address:

Postal address:	**DX address**
National Lyme borreliosis testing laboratory Microbiology Department Zone 3, Raigmore Hospital Old Perth Road Inverness IV2 3UJ	DX6180102 - 90IV

2.2 Telephone/ Fax/ email:

General/ laboratory enquiries (09:00 - 17:30 Monday to Friday)	01463 704206 / 704207 (direct)
Clinical enquiries (09:00 - 17:00 Monday to Friday)	01463 704206 / 704207 (direct)
Fax	01463 705648
email	nhshighland.microbiology@nhs.net

2.3 Key personnel:

Designation	**Name**	**Telephone**
Clinical Lead	Dr Emma Watson	01463 705431
Consultant Clinical Scientist	Dr Roger Evans	01463 705889
Clinical Scientist	S Mavin	01463 705889
Microbiology Service Manager	Dr David Ashburn	01463 704108

3.0 Opening hours

3.1 Core Hours are Monday – Friday 9.00am to 5.30pm
The department does not operate an out-of-hours service for Lyme borreliosis

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4.0 Service provided

4.1 Samples

- **Serology:** Clotted blood (10ml)/ serum (500µl)/ CSF (200µl). CSF samples **must** be accompanied by serum sample.
- **PCR:** Skin biopsies/ CSF (200µl, after discussion with laboratory)/ joint fluid (200µl).

4.2 Laboratory tests

- Enzyme Immunoassay (EIA)
- IgG Immunoblot for confirmation of EIA
- PCR (PCR samples **must** be accompanied by serum sample).

4.3 Specialist advice

- The laboratory can be contacted (as above in 2.1) for clinical enquiries regarding Lyme borreliosis as well as advice regarding specialist testing.

5.0 Clinical Information

This is vitally important in deciding how to test a sample. Please give specific symptoms and signs and details of any tick bite/exposure. In accordance with the BIA position statement on Lyme borreliosis, we do not test samples without clinical details provided or asymptomatic patients with tick bite. Likewise we no longer test samples if clinical details are tick bite and erythema migrans (EM). These patients should be treated accordingly.

5.1 Early Lyme borreliosis

- Onset of symptoms 3-32 days following a tick bite.
- Erythema migrans (EM) rash is diagnostic but rash may be atypical. Tender muscles/ joints, pyrexia and lymphadenopathy can also occur.
- Meningitis/ encephalitis are rare.
- **NB: For patients with suspected early Lyme borreliosis a negative result does not exclude the possibility of *Borrelia burgdorferi* infection.** Failure to detect antibodies may be the result of: -
    - Sample collection prior to antibody development
    - Inhibition of antibody development due to antibiotic treatment
    - Failure of some patients to produce antibodies
    - If a negative report is issued on a patient with a clinical history consistent with early Lyme disease, a further sample should be requested 6-8 weeks after onset.

5.2 Late Lyme borreliosis

- Weeks to months after tick exposure.
- Multiple or single system involvement of skin, joints, heart, brain or peripheral nerves.

6.0 Specimen and request form labelling

6.1 For the safety of patients and staff, the NHS Highland Area Laboratory Service operates a strict specimen acceptance policy (full copy is available on request).

6.2 Specimens may be submitted either using a referring laboratory's own request form or with a letter. However both the request form (or letter) and sample must be labelled with a minimum of three pieces of information to allow **unequivocal identification** of the patient:

MINIMUM DATA SET	
Request form	**Sample**
Patient's surname(1)	Patient's surname(1)
Patient's forename(s)	Patient's forename(s)
CHI number (2)	CHI number(2)
Date of birth (not age)	Date of birth (not age)

(1) Or accepted coded identifier (e.g. soundex code, NaSH number)
(2) Where the CHI number is **not** available a third point of identification (e.g. address) **must be** provided.

In addition, please ensure the request form includes:

- Name and location of sender (or details of where the final report should be sent if different)
- Specimen type
- Date and time of collection
- Associated clinical information

6.3 Specimens that do not conform to the minimum data set will **NOT** be processed by the laboratory.

6.4 The department will reject specimens that present a Health & Safety hazard to staff (e.g. leaking specimens, contamination of specimen containers external surfaces), inappropriate and insufficient specimens.

7.0 Specimen transportation

7.1 Samples must be appropriately packaged and transported in accordance with current regulations.

7.2 If unsure of the current regulations please contact the laboratory for advice.

7.3 Please ensure that packages contain sufficient absorbent material to contain all liquid.

7.4 Please ensure request forms are placed between the plastic container and cardboard outer and not with the sample inside the plastic container.

7.5 Samples should be sent to the laboratory via Royal Mail or DX courier to the address shown in section 2.1 or using other appropriate transport within NHS Highland.

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8.0 Charges

Samples received from referring laboratories and private patients are subject to charge; prices are reviewed annually and are available on request.

9.0 Results and turn around times

Serology	Within 10 working days
PCR	Within 7 working days
Urgent requests	Please contact the laboratory

Results are returned by Royal Mail to the address on the request form or electronically (where available).

10.0 Treatment

10.1 Early Lyme borreliosis

- Oral doxycycline (100mg 2 x daily for 14-21 days) or oral amoxicillin (500mg 3 x daily for 14-21 days). Erythromycin may be considered in penicillin allergic children.
- IV Ceftriaxone if severe.

10.2 Late Lyme borreliosis

- Arthritis: Oral doxycycline (100mg 2 x daily for 28 days) or amoxicillin (500mg 3 x daily for 28 days). Persistent arthritis may require repeat oral antibiotic course or IV antibiotics.
- Neuroborreliosis: IV Ceftriaxone/ Penicillin.
- Skin and other late forms of disease require specialist advice.

11.0 Prevention

When visiting areas inhabited by ticks long trousers should be tucked into socks and long sleeves worn. An insect repellent may also be used. Regular checks should be made and any ticks removed within 24 hrs.

12.0 References

The epidemiology, prevention, investigation and treatment of Lyme borreliosis in United Kingdom patients: a position statement by the British Infection Association. *J Inf* (2011) **62**,329-339

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